

What is Claim d is:

1. A method for inhibiting disease on and in plant tissues, comprising:

applying, to seeds or tubers for a plant prior to planting or to roots, foliage, flowers or fruit of a plant after planting, an auxin in an amount effective to inhibit growth of harmful organisms causing said disease but wherein said amount is insufficient to negatively effect growth of said plant tissues.

2. The method of Claim 1 wherein said auxin is selected from the group consisting of natural auxins, synthetic auxins, auxin metabolites, auxin precursors, auxin derivatives and mixtures thereof.

3. The method of Claim 2 wherein said auxin is a natural auxin.

4. The method of Claim 3 wherein said natural auxin is indole-3-acetic acid.

5. The method of Claim 2 wherein said auxin is a synthetic auxin.

6. The method of Claim 5 wherein said synthetic auxin is selected from the group consisting of indole propionic acid, indole-3-butyric acid, phenylacetic acid, naphthalene acetic acid (NAA), 2,4-dichlorophenoxy acetic acid, 4-chloroindole-3-acetic acid, 2,4,5-trichlorophenoxy acetic acid, 2-methyl-4-chlorophenoxy acetic acid, 2,3,6-trichlorobenzoic acid, 2,4,6-trichlorobenzoic acid, 4-amino-3,4,5-trichloropicolinic acid and mixtures thereof.

7. The method of Claim 6 wherein said synthetic auxin is indole-3-butyric acid.

8. The method of Claim 2 wherein said auxin is applied to seeds or tubers at a rate of about 0.0028 to about 0.028 gm auxin/100 kg seed weight.

9. The method of Claim 2 wherein said auxin is applied to bean seeds at a rate of about 0.0028 to about 0.028 gm auxin/100 kg seed weight.

10. The method of Claim 9 wherein said auxin is applied at a rate of about 0.016 to about 0.112 gm auxin/100 kg seed weight.

11. The method of Claim 2 wherein said auxin is applied to potato seed pieces at a rate to result in about 0.0125 to about 2.8 gm auxin/hectare of planted pieces.

12. The method of Claim 11 wherein said auxin is applied at a rate to result in about 0.125 to about 0.28 gm auxin/hectare of planted pieces.

13. The method of Claim 2 wherein said auxin is applied to the roots, foliage, flowers or fruit of plants at a rate of about 0.0002 to about 0.06 gm auxin/hectare/day.

14. The method of Claim 2 wherein said auxin is applied as an aqueous solution of said auxin.

15. The method of Claim 14 wherein said solution further comprises a metal selected from the group consisting of alkaline earth metals, transition metals and mixtures thereof.

16. The method of Claim 15 wherein said metal is selected from the group consisting of calcium, zinc, copper, manganese and mixtures thereof.

17. The method of Claim 15 wherein said metal is present in said solution in a range of about 0.001 to about 5.0 percent-by-weight.

18. The method of Claim 2 wherein said auxin is applied by spraying said seeds or tubers with an aqueous solution of said auxin or by immersing said seeds or tubers in an aqueous solution of said auxin.

19. The method of Claim 2 wherein said disease organisms are selected from the group consisting of fungi, bacteria and mixtures thereof.

20. The method of Claim 19 wherein said fungi are selected from the group consisting of the *Fusarium*, *Rhizoctonia*, *Pythium* and *Phytophthora* families and mixtures thereof and said bacteria are selected from the group consisting of *Erwinia*, *Pseudomonas* and mixtures thereof.

21. The method of Claim 2 wherein said plants are crop plants selected from the group consisting of dry beans, soybeans, onions, corn, cotton, potatoes and mixtures thereof.

22. The method of Claim 2 wherein said auxin is applied as a dry powder including said auxin or as an aqueous solution of said auxin.

23. The method of Claim 2 wherein said auxin is applied to the seeds, tubers or roots of said plant in an encapsulated form to provide for slow release of said auxin.

24. The method of Claim 23 wherein said auxin is encapsulated in a biologically compatible material providing slow release of said auxin, said material

selected from the group consisting of clays, lignites, resins, silicones and mixtures thereof.

25. A method for inhibiting disease on and in plant tissues, comprising:

manipulating the level of auxin in said plant tissues by applying, to seeds or tubers for a plant prior to planting or to roots, foliage, flowers or fruit of a plant after planting, a plant growth hormone or a precursor or conjugate of said hormone in an amount effective to adjust the auxin in said plant tissues to a level sufficient to inhibit growth of harmful organisms causing said disease but wherein said level is insufficient to negatively effect growth of said plant tissues.

26. The method of Claim 25 wherein said plant growth hormone is selected from the group consisting of auxins, ethylene, cytokinins, gibberellins, abscisic acid; brassinosteroids, jasmonates, salicylic acids and precursors and mixtures thereof.

27. The method of Claim 25 wherein said plant growth hormone is an auxin.

28. A method for controlling the growth of *Fusarium* and *Rhizoctonia* organisms on dry bean plants, comprising:

applying, to bean seeds for said plants prior to planting, an auxin in an amount effective to inhibit the growth of said organisms on and in tissues of said plants but wherein said amount is insufficient to negatively effect growth of tissues of said plants.

29. The method of Claim 28 wherein said auxin is indole-3-acetic acid.

30. The method of Claim 29 wherein said auxin is applied at a rate of about 0.0028 to about 0.28 gm auxin/100 kg seed weight.

31. The method of Claim 30 wherein said auxin is applied by spraying said seeds with an aqueous solution of said auxin.

32. The method of Claim 31 wherein said solution further comprises a metal selected from the group consisting of calcium, zinc, copper, manganese and mixtures thereof.

33. A method for inhibiting the infestation of plants by insects and larvae of said insects, comprising:

applying, to the seeds or tubers of a plant prior to planting, or to the roots, foliage, flowers or fruit of said plants after planting an auxin in an amount effective to inhibit infestation by said insects and larvae but wherein said amount is insufficient to negatively effect growth of tissues of said plants.

34. The method of Claim 33 wherein said auxin is selected from the group consisting of natural auxins, synthetic auxins, auxin metabolites, auxin precursors, auxin derivatives and mixtures thereof.

35. The method of Claim 34 wherein said auxin is a natural auxin.

36. The method of Claim 35 wherein said natural auxin is indole-3-acetic acid.

37. The method of Claim 34 wherein said auxin is a synthetic auxin.

38. The method of Claim 37 wherein said synthetic auxin is selected from the group consisting of indole propionic acid, indole-3-butyric acid, phenyl acetic acid, naphthalene acetic acid (NAA), 2,4-dichlorophenoxy acetic acid, 4-chloroindole-3-acetic acid, 2,4,5-trichlorophenoxy acetic acid, 2-methyl-4-chlorophenoxy acetic acid, 2,3,6-trichlorobenzoic acid, 2,4,6-trichlorobenzoic acid, 4-amino-3,4,5-trichloropicolinic acid and mixtures thereof.

39. The method of Claim 38 wherein said synthetic auxin is indole-3-butyric acid.

40. The method of Claim 34 wherein said auxin is applied at a rate exceeding about 0.0002 gm auxin/hectare/day.

41. The method of Claim 40 wherein said auxin is applied at a rate of about 0.0002 to about 0.06 gm auxin/hectare/day.

42. The method of Claim 41 wherein said auxin is applied at a rate of about 0.002 to about 0.01 gm auxin/hectare/day.

43. The method of Claim 34 wherein said auxin is applied to said roots, foliage, flowers or fruit as a dry powder including said auxin or as an aqueous solution of said auxin.

44. The method of Claim 43 wherein said auxin is applied by dusting with a dry powder including said auxin.

45. The method of Claim 43 wherein said auxin is applied as an aqueous solution by drip irrigation or by spray application.

46. The method of Claim 45 wherein said solution further includes a metal selected from the group consisting of alkaline earth metals, transition metals and mixtures thereof.

47. The method of Claim 46 wherein said metal is selected from the group consisting of calcium, zinc, copper, manganese and mixtures thereof.

48. The method of Claim 34 wherein said insects are selected from the group consisting of sucking insects, chewing insects and mixtures thereof.

49. The method of Claim 48 wherein said sucking insects are selected from the group consisting of mites, aphids, thrips, white fly, leaf hoppers, flea hoppers, scaling insects and mixtures thereof and said chewing insects are selected from the group consisting of *Lepidoptera*, *Helidoceras* and mixtures thereof.

50. The method of Claim 34 wherein said plants are crop plants selected from the group consisting of dry beans, soybeans, onions, corn, cotton, potatoes and mixtures thereof.

51. A method for inhibiting the infestation of plants by pests, including insects and larvae of said insects, comprising:

manipulating the level of auxin in plant tissues of said plants by applying, to seeds or tubers for a plant prior to planting or to roots, foliage, flowers or fruit of a plant after planting, a plant growth hormone or a precursor or conjugate of said hormone in an amount effective to adjust the auxin in said plant tissues to a level sufficient to inhibit growth of harmful organisms causing said disease but wherein said level is insufficient to negatively effect growth of said plant tissues.

52. The method of Claim 51 wherein said plant growth hormone is selected from the group consisting of auxins, ethylene, cytokinins, gibberellins, abscisic acid, brassinosteroids, jasmonates, salicylic acids and precursors and mixtures thereof.

53. The method of Claim 51 wherein said plant growth hormone is auxin.

54. A method for inhibiting the infestation of onion plants by thrips and larvae of said thrips, comprising:

applying to the foliage of said onion plants an auxin in an amount effective to inhibit infestation by said thrips and larvae but wherein said amount is insufficient to negatively effect growth of tissues of said plants.

55. The method of Claim 54 wherein said auxin is indole-3-acetic acid.

56. The method of Claim 55 wherein said auxin is applied at a rate of about 0.0002 to about 0.06 gm auxin/hectare/day.

57. The method of Claim 54 wherein said auxin is applied as an aqueous solution by spray application to said foliage.

58. The method of Claim 57 wherein said solution further comprises a metal selected from the group consisting of alkaline earth metals, transition metals and mixtures thereof.

59. The method of Claim 54 wherein said auxin is applied by dusting with a dry powder including said auxin.

60. A seed or seed piece for producing plants having enhanced resistance to disease, comprising:

a plant seed or seed piece; and

an auxin dispersed on the surface of said seed or seed piece, said auxin present in an amount effective to inhibit growth in or on tissues of said plant of harmful organisms causing said disease but wherein said amount is insufficient to negatively effect growth of said plant tissues.

61. The seed or seed piece of Claim 60 wherein said auxin is selected from the group consisting of natural auxins, synthetic auxins, auxin metabolites, auxin precursors, auxin derivatives and mixtures thereof.

62. The seed or seed piece of Claim 61 wherein said auxin is indole-3-acetic acid.

63. The seed or seed piece of Claim 61 wherein said auxin is present in an amount of about 0.0028 to about 0.028 gm auxin/100 kg seed weight.

64. The seed or seed piece of Claim 61 wherein said seed is a bean seed and said auxin is present in an amount from about 0.0028 to about 0.028 gm auxin/100 kg seed weight.

65. The seed or seed piece of Claim 61 wherein said seed piece is a potato seed piece and said auxin is present in an amount which results in about 0.0125 to about 2.8 gm auxin/hectare of planted seed pieces.

66. The seed or seed piece of Claim 61 wherein said disease organisms are selected from the group consisting of fungi, bacteria and mixtures thereof.

67. The seed or seed piece of Claim 61 wherein said plants are crop plants selected from the group consisting of dry deans, soybeans, onions, corn, cotton, potatoes and mixtures thereof.

68. A seed or seed piece for producing plants having enhanced resistance to disease, comprising:

a plant seed or seed piece; and

a plant growth hormone capable of effecting the level of auxin of said plant dispersed on the surface of said seed or seed piece, said hormone present in an amount effective to inhibit growth of harmful plant pathogens and causing said disease but wherein said amount is insufficient to negatively effect growth of said plant.

69. The seed or seed piece of Claim 68 wherein said plant growth hormone is selected from the group consisting of auxins, ethylene, cytokinins, gibberellins, abscisic acid, brassinosteroids, jasmonates, salicylic acids and precursors and mixtures thereof.

70. The seed or seed piece of Claim 69 wherein said plant growth hormone is an auxin.